## Space Weather Forecast

Issued on Thursday, 28 October 2021 at 13:16 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

**Space Weather Forecast Headline: Moderate Solar Activity with further R1-R2 Radio Blackouts possible.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Two Moderate class flares (R1 Radio Blackouts) have been observed from a complex and moderately sized sunspot in the southern centre disc. There are five sunspot regions in total on the Earth-facing solar disc, with one other notable region in the northeast which also has the potential for producing Moderate class flares. All other regions are small and simple. No Earth-directed coronal mass ejections have been observed in available imagery.

**Solar Wind / Geomagnetic Activity:** Solar winds were at background levels, with speeds falling from 400km/s to near 300km/s. the magnetic field carried by the wind (IMF) was weak with no notable component in the north-south direction. Geomagnetic activity remained Quiet

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Moderate to Low solar activity is forecast with further Moderate-class flares possible. These most likely from the moderately complex sunspot in the southern centre disc, but potentially also from the other complex region in the northeast.

**Solar Wind / Geomagnetic Activity:** A glancing impact from a passing CME is possible late day 3 (30th) or early day 4 (31st) but is low confidence. No other CMEs are currently expected to arrive at Earth. Otherwise solar winds are expected to remain mostly at background through the period. Mainly quiet Geomagnetic activity is forecast, with a slight chance of Unsettled intervals and a chance of Active intervals day 3 (30th) or day 4 (31st) from any CME arrival

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to remain below solar radiation storm level. There is slight chance of this increasing above background however due to any notable flaring from AR2887.

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 1 | 1 | 5 | 5 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | Yes | 60 | 50 | 40 | 40 |
| Very Active | R3 to R5 X | No | 5 | 5 | 2 | 2 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 2 | 2 | 2 | 2 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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